BISSELL COVE
RHODE ISLAND

SURVEY
(REVIEW OF REPORTS)

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

OCTOBER 1967
REVISED APRIL 1968

SYLLABUS

The Division Engineer has studied the navigation problem at Bissell Cove, North Kingstown, Rhode Island and finds that present navigation is extremely limited by inadequate entrance channel depths and width, insufficient depth for anchorage within the cove, and lack of docking facilities to accommodate vessel traffic. He further finds no indication that commercial fishing interests would utilize Bissell Cove, even if improved, but that improvement of the cove would be of benefit to the existing and prospective recreational fleets. The considered plan of improvement would consist of:

a. An entrance channel, 6 feet deep by 100 feet wide from the proposed basin extending seaward to the 6-foot depth contour in Narragansett Bay.

b. Two stone jetties and one gravel dike to protect the channel and anchorage facilities within the cove.

c. A 2-acre, 6-foot deep maneuvering and anchorage basin at the head of the channel.

d. An adequate public marina facility within the cove capable of accommodating at least 40 boats.

The total Federal first cost of construction of this plan of improvement is presently estimated at $308,000, excluding the cost of navigation aids. The annual maintenance cost is estimated at $3,100 of which $2,100 is for dredging and $1,000 is for jetty repairs. The benefit-cost ratio is estimated at 1.15 to 1. The improvement would benefit recreational boating only. Therefore, local interests should contribute, in cash, 50 percent of the first cost of Federal construction, said contribution presently estimated at $154,000.

In addition, local interests would be required to provide and maintain a marina facility at the cove, estimated to cost $125,000. The resulting project benefits are sufficient to warrant Federal improvement. However, the Town of North Kingstown reported by letter dated 24 July 1967 that they are unable to meet the financial requirements of the considered project. The State of Rhode Island,

Department of Natural Resources, reported by letter, dated 1 August 1967, that the Town of North Kingstown, R.I., desires the project and is in favor of the Federal plan of improvement but is not now in a position to finance its share of the cost. As a result, they concur in the decision of the Town. The Division Engineer, therefore, recommends no Federal improvement of Bissell Cove be made at this time.

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:

NEDED-R

5 October 1967

SUBJECT: Survey (Review of Reports) on Bissell Cove, Rhode Island

TO: Chief of Engineers
ATTN: ENGCW-PD

AUTHORITY

1. This report is submitted in compliance with a resolution adopted 23 June 1964, which reads as follows:

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, That the Board of Engineers for Rivers and Harbors is hereby requested to review the report on Bissell Cove, Rhode Island, printed in Senate Executive Document Number 30, Forty-eighth Congress, First Session, with a view to determining whether improvements for general navigation and related purposes are warranted at the present time."

PURPOSE AND EXTENT OF STUDY

2. This study considered the engineering feasibility and economic justification for Federal navigation improvements in Bissell Cove, Rhode Island. A public hearing was held on 9 December 1964 to determine the nature, extent and need of navigation improvements desired by local interests. All available maps, charts and past records pertaining to the harbor were studied. Local interests and all interested Federal and State agencies were consulted to obtain their views relative to navigation improvements at Bissell Cove.

DESCRIPTION

3. Bissell Cove is a shallow, sheltered cove, located midway between Wickford Harbor and Jamestown Bridge on the west shore of

Narragansett Bay, in the Town of North Kingstown, Rhode Island. Entrance to the Cove is restricted to a narrow, twisting opening between two sandspits at the extreme southern end of the inlet. The Cove has a water area of about 75 acres at high tide, of which about 80 percent is exposed at low tide. Mean range of tide is about 3.8 feet. Navigation in the Cove is extremely limited due to shallow water depths at all stages of the tide.

4. The Annaquatucket River and the Wannuckecomecut Brook drain into the Cove from the adjacent watershed. Both flow generally east and enter at the west side of the Cove. The sediment load of the river and the brook at their respective points of discharge into the Cove is negligible. It does not appear that these two streams would be a problem to navigation in any way.

TRIBUTARY AREA

5. The area immediately tributary to Bissell Cove is the village of Hamilton in North Kingstown, Rhode Island, and also includes the Towns of South Kingstown and East Greenwich. Wickford Harbor in the village of Wickford and town of North Kingstown is located about 2 miles north of Bissell Cove. It has been improved several times in the past by the Federal Government for small boat navigation.

6. The permanent population of North Kingstown, of which Wickford is the business center, was 18,977 in 1960, an increase of approximately 28% since 1950. The population of North Kingstown is further increased by a large number of naval personnel stationed at the Quonset Point and Davisville naval installations. Wickford Harbor has a harbor area of about 2 square miles. The Mill Cove anchorage at Wickford Harbor has recently been constructed by the Corps of Engineers.

7. The principal industries and occupations in the general area include textile manufacturing, farming, fishing, boat repairing and supplying the needs of summer tourists and residents. Industry at the Cove area is limited to Hamilton Webb Company, which manufactures decorative fabrics and employs from 100 to 249 people. Substantial residential development of single family homes exists along the north end of the Cove.

BRIDGES

8. There are no bridges in Bissell Cove.

PRIOR REPORTS

9. Bissell Cove has been the subject of a preliminary examination study made in 1882, which found that no Federal navigation improvements were warranted at that time.

EXISTING CORPS OF ENGINEERS PROJECTS

10. There has never been a Federal navigation project at Bissell Cove.

OTHER IMPROVEMENTS

11. No known improvements for the benefit of general navigation have been made by local interests in Bissell Cove.

TERMINAL AND TRANSFER FACILITIES

12. There are no public or commercial waterfront facilities within the cove at this time. A small boat shop, owned and operated by the Payne and Franklin Boat Company, is located on high ground at the west side of the cove. The shop is used only for storage and the company does not use the cove in connection with its boat business. A great deal of the cove's waterfront is undeveloped.

13. The use of the cove by barges to import raw materials has been discontinued. This practice was stopped after the severe storms of 1954. The one and only mill now operating at the cove imports and exports all necessary materials by truck and has reported that they would have no use of the cove for navigation even if it was improved.

14. The U. S. Fish and Wildlife Service, in cooperation with the Rhode Island Division of Fish and Game and the Bureau of Commercial Fisheries, reported in general the present harbor conditions and navigation difficulties at the cove. They report little shoreline development for navigation, boating use of the cove is light, considerable pollution exists in the cove and no commercial fishing boats are now based or could be expected to relocate at the cove, if improved.

IMPROVEMENT DESIRED

15. To determine the nature, extent and need of improvement desired in Bissell Cove by local interests, a public hearing was held in Wickford, Rhode Island on 9 December 1964. The hearing

was attended by approximately 40 persons, including representatives of Federal, State and local governments and by boating interests.

16. A local group known as the Bissell Cove Beach Association described existing conditions and recommended the following navigational improvements which they considered essential for the full use of the cove for both commercial and recreational boating:

a. A 12-foot deep entrance channel near Rome Point to accommodate a prospective commercial, deep-draft fishing fleet.

b. An additional entrance channel of sufficient depth and width to accommodate a large, prospective recreational boating fleet and improve tidal circulation within the cove.

c. A 7-foot deep, north-south interior channel to insure safe access of boats within the cove.

d. An anchorage basin of about 75 acres, 6 feet deep within the cove.

e. Construction of jetties to reduce the deposition of sand and silt in the entrance channels. In addition, a number of on-shore facilities were requested; however, these were found to be outside the scope of a Federal navigation improvement. Therefore, they are not considered in this report.

17. All present at the hearing were in favor of an improvement at the cove; however, some felt a navigation project with a much smaller anchorage basin than the 75-acre anchorage proposed would meet their needs.

18. Local interests also expressed the desire for the provision of a dam and lock to control the level of the water within the cove, thereby preventing the release of disagreeable odors from decaying vegetation during periods of low tide. This plan, they feel, would meet their needs for navigation and eliminate the high cost of dredging anchorage space for boats within the cove.

19. As justification for improvements, local interests cited the present navigation difficulties experienced in the cove. Channel difficulties result from inadequate depth and width and the lack of sufficient depth of water in the cove for boats. As a result, these conditions have made the cove a useless body of water unfit for navigation. However, with improvements, local interests believe industry would locate or

relocate in the surrounding area and would encourage commercial fishermen to relocate to the cove. In addition, it is expected that provision of 75 acres of anchorage space in the cove would attract about 400 recreational craft.

EXISTING AND PROSPECTIVE COMMERCE

20. At the present time, there is no commerce on the waterway and no evidence has been found that commercial use of the harbor for navigation would develop. Investigation of the cove's potential to attract commercial and/or recreational boating to the cove revealed the lack of interest on the part of the commercial fishing industry, local commerce and nearby marina industries to locate or use the cove for navigation at this time.

VESSEL TRAFFIC

21. Vessel traffic in the waterway is confined to recreational boating. There is an existing fleet of 20 small boats, including 10 rowboats. However, these boats are able to use the cove, due to existing shoaled conditions, only at high water. It is estimated that vessel trips for the entire fleet amount to no more than 100 trips per year.

DIFFICULTIES ATTENDING NAVIGATION

22. Extensive shoaling over many years has eliminated the use of the cove for navigation, except at high water. Entrance to the cove is restricted to a very shallow, narrow, twisting, short, natural channel between two sand bars at the extreme south end of the cove. Docking facilities at the cove to accommodate vessel traffic are non-existent.

WATER POWER AND OTHER SPECIAL SUBJECTS

23. The waterway is tidal. Flood control, water power, and related subjects are not pertinent to this report. The United States Fish and Wildlife Service has indicated that the fish and wildlife habitat would not be significantly affected by the proposed navigation improvement and recommended all spoil be deposited on an approved dumping ground in Narragansett Bay. The U. S. Fish and Wildlife report is included in Appendix A.

PROJECT FORMULATION

24. Consideration was given to providing an entrance channel and maneuvering basin at both the north and south ends of the cove. Study found that the northern location presented at least three problems not created at the proposed southern site; namely, the adverse configuration of the shoreline, severing the existing sandbar from the mainland, and the creation of an artificial stagnant pool at the south end of the cove. These problems, as they affect navigation, could be resolved but would result in a much more expensive project without sufficient additional project benefits to justify the increased cost. The southern project location represents the most economical and practical development for permitting increased use of the cove as desired for navigation.

25. Investigation revealed no commercial navigation is expected to develop in the cove. Therefore, navigational improvements would be solely for the benefit of recreational boating. In view of the type, size and number of boats expected to make use of the cove and the relatively sheltered position of the cove from exceptionally severe storm waves, it was found that a 6-foot deep by 100-foot wide entrance channel protected by two small stone jetties, a gravel dike and a 4-acre anchorage 6 feet deep at the head of the channel would be the minimum plan worthy of development to accommodate adequately the present and prospective navigation needs in the cove. The anchorage would permit expansion of the existing recreational fleet from its present 10 to 40 during the next 50 years. This represents an average annual increase of 6 percent which is the national average. However, provision of this anchorage with the other project features, including a public landing, would not generate sufficient boat return to justify the cost of the plan of improvement.

26. As a result of the foregoing, an alternate plan was developed which would provide a logical and economically feasible means of meeting current and prospective needs of navigation in Bissell Cove. This plan consists of the same project features as mentioned above except that the basin size would be reduced to 2 acres and would serve as a maneuvering area as well as an open anchorage. This alternate plan, would generate the maximum net benefits needed for project justification if local interests agree to construct and maintain a marina facility. This plan is described under "Plan of Improvement." No additional opportunities pertaining to pollution control, water power or wildlife are involved.

PLAN OF IMPROVEMENT

27. Present navigation in Bissell Cove is extremely limited by inadequate entrance channel depth and width and insufficient anchorage area at all stages of the tide. Based on a study of available hydrographic and probing survey information in the area, substantial amounts of mud and sand are present over most of the cove's harbor area.

28. The desire of local interests for a navigation improvement and abatement of disagreeable odors which are released from decaying vegetation during periods of low tide was considered within the cove. Any improvement of the cove for navigation would require a stabilized and protected entrance channel, as well as anchorage space. The provision of a dam and lock to control the level of the water within the cove would be required to eliminate the odor problem. However, the latter would only add to the cost of the improvement without commensurate navigation benefits and therefore could not be given detailed consideration in this report.

29. No evidence of boat usage has been found to substantiate the need for the desired 12-foot and 7-foot channels at the cove.

30. The existing inlet between the cove and the bay is relatively unstable. This condition has resulted from the movement of material along the shore, aggravated by wave action and further complicated by the lack of sufficient tidal flow through the inlet. There is a large net southerly drift of material with local reversals and variations. This net littoral drift is from north to south which over many years has resulted in the build-up of a large spit or bar of sand and gravel that divides the harbor from the bay. The existing top elevation of this sandbar is generally 6 feet above MLW. At its midsection, the bar has a natural high area of 12 feet above MLW. The reversal of littoral direction appears due to east and southeasterly storms; also, to the refraction and diffraction of storm waves around Rome Point.

31. The cove is exposed to storm waves from the northeast quadrant. Wave statistical records indicate 4 - 6 foot waves from the north-northeast, the most exposed direction, break with appreciable frequency and duration near the cove's exposed sand beach front.

32. The position and size of the proposed entrance channel were carefully considered. Consideration of wave approach, littoral drift and tidal currents revealed the opening best suited to provide the

greatest protection to vessels entering during adverse weather and to control effectively the flow of water during tidal changes should be aligned generally northeast and be about 6 feet deep by 100 feet wide.

33. An effective entrance channel should be protected by two stone jetties to reduce the movement of beach materials along the shore and provide an adequate beach impoundment area to trap littoral drift that would otherwise severely shoal the proposed channel and anchorage area.

34. Overtopping of the existing sandbar from wave run-up is not considered a serious problem to navigation. However, to insure the jetties' impoundment capacity is adequate throughout project life, assist in reducing the movement of material over the existing sandbar during severe storm conditions, and reduce scouring of the bar on the cove side from wave splash, gravel diking has been included where necessary as a project protective feature. This dike could also serve as a means of land access to a town-owned public landing.

35. No justification could be found for a 4-acre anchorage because of insufficient boat return. Therefore, a 2-acre basin was considered and found warranted if a marina facility were to be provided. The 2-acre basin would serve as a maneuvering area for boats using the marina and could also be used as an anchorage for a small number of boats. Because a marina facility is more convenient and desirable as a boat mooring area than open anchorage, it is reasonably expected that the additions to the fleet would be 40 rather than 30 for an open anchorage thus totalling 50 boats and are expected soon after improvement. Further, the percent return per boat for marina facilities would be the maximum after improvement, i. e. 100 percent.

36. Thus, the plan of improvement developed to meet the needs of local interests for navigation at Bissell Cove would consist of:

a. An entrance channel 6 feet deep by 100 feet wide from the proposed basin extending seaward to the 6-foot depth contour in Narragansett Bay.

b. Two stone jetties and one gravel dike needed to protect the channel and anchorage facilities within the cove.

c. A 2-acre, 6-foot deep maneuvering and anchorage basin at the head of the channel.

d. A marina facility within the cove capable of accommodating at least 40 boats.

37. The provision of a public marina, owned and/or under the control of a public body would serve to satisfy the requirement for a public terminal in the cove. It is considered that the marina and its support facilities would be self-liquidating. These support facilities are covered under Proposed Local Cooperation.

38. Hydraulic spoiling of dredged material near the project site was considered. There is a swamp area close by the north end of the cove capable of accommodating all of the dredged material. Local opposition to the use of this area and the marshlands fringing the cove was reported at the public hearing. The U. S. Fish and Wildlife Service also states that spoiling within the cove would damage fish and wildlife resources. The marshland fringing the cove is an important element in the estuarine complex of the cove and, therefore, the marshlands should not be used for spoil disposal.

39. The recommended plan is designed to permit boats direct, safe water access to the cove at all stages of the tide, increase tidal circulation, permit the construction of a public marina facility, reduce boat damages, add to the natural protection of the cove from severe storms and thus provide the opportunity for immediate expansion of boating interests. It is expected that with a navigation improvement, the action of the tide coupled with the establishment of regulations prohibiting the discharge of pollutants in the water and for pollution prevention and control of these regulations under local authority, as required, would alleviate the unsavory conditions existing in the immediate vicinity of the improvement to such degree as to attract boating interests. Residents have located along the shores of the cove with a knowledge of the conditions of the cove.

SHORELINE CHANGES

40. The construction of two stone jetties and gravel diking as proposed would result in a substantial accretion of beach materials along the shoreline of Bissell Cove. Other than this beach widening, no further shoreline changes are anticipated.

REQUIRED AIDS TO NAVIGATION

41. The U. S. Coast Guard has been consulted with regard to establishing aids to navigation for the improvement under consideration. They have reported by letter dated 15 March 1966 that, if the project is constructed, two day-beacons will be required, one on each stone jetty, estimated to cost $9,000 with an annual maintenance cost of $200.

ESTIMATES OF FIRST COSTS

42. Federal construction under the considered plan of improvement would consist of the dredging of a 6-foot deep channel and maneuvering basin, construction of two stone jetties and a gravel dike. Local interests would be responsible for the construction of a 40-boat marina and related facilities, plus the dredging of interior access channels and berths. The U. S. Coast Guard would provide necessary navigation aids. The estimate is based on removal of material by bucket dredge and scow, with disposal of materials on an approved dumping ground in Narragansett Bay. Dredging quantities are in terms of in-place measurement, with one-foot overdepth and 1 on 3 side slopes. The estimated first cost is based on September 1967 price levels and includes an allowance for contingencies.

PROJECT COST ESTIMATE

FEDERAL

Corps of Engineers

Dredging (ordinary materials)		
60,000 c. y. x $2.00 =		$ 120,000
Jetties		
Armor Stone 5,500 ton x $8.00 =	$44,000	
Core Stone 11,000 ton x $5.00 =	$55,000	99,000
Dike - Gravel Borrow 1,000 c. y. x 3.00		3,000
Contingencies		33,000
Engineering and Design		28,000
Supervision and Administration		25,000
		$ 308,000(1)

U. S. Coast Guard

Aids to Navigation	$ 9,000
Total Federal Cost	$ 317,000

(1) Exclusive of $11,500 for preauthorization study

NON-FEDERAL

40-boat marina facility (incl. berth and access channel dredging, parking areas and all required attendant facilities)	$	125,000 (2)
Total Project Cost (Federal and Non-Federal)	$	442,000

(2) Self-liquidating

APPORTIONMENT OF COSTS AMONG INTERESTS

43. Construction costs for the considered navigational improvement, exclusive of the costs of the marina and attendant facilities which are considered to be self-liquidating, have been apportioned between Federal and Non-Federal interests in proportion to the benefits received. Since the ratio of evaluated general benefits to local benefits is 50 percent, respectively, construction costs have been apportioned in the same ratio. The apportionment of costs is shown as follows:

FEDERAL

Corps of Engineers (0.50 x $308,000)	$	154,000
U.S. Coast Guard		9,000
Total Federal	$	163,000

NON-FEDERAL

Local Cash Contribution (0.50 x $308,000)	$	154,000
40-slip marina facility & attendant facilities		125,000
Total Non-Federal	$	279,000
Total Project Costs	$	442,000

ESTIMATE OF ANNUAL CHARGES

44. Annual charges for the considered plan of improvement have been estimated on the basis of a 50-year project life with Federal and Non-Federal interest rates of 3-1/4%. The average annual estimated maintenance charges for the proposed plan of improvement are based on past experience with similar existing Federal projects. The plan under consideration contemplates dredging for the first time in shallow

flats to provide a 6-foot channel and maneuvering basin. It is estimated that the initial shoaling rate may be high but will reduce as the newly dredged slopes stabilize. In view of the above, the average annual rate of shoaling is estimated to amount to about 700 cubic yards. The estimated unit price of dredging these shoals is $3.00 per cubic yard, resulting in an average annual maintenance cost of about $2,100. The annual maintenance cost of the two stone jetties is estimated at $1,000.

45. Annual charges have been computed as follows:

FEDERAL ANNUAL CHARGES

a. Corps of Engineers		
Interest and Amortization ($154,000 x .04073) =	$	6,300
Annual Maintenance -		
Dredging 700 c.y. x $3.00 =		2,100
Jetty Repair		1,000
b. U. S. Coast Guard		
Interest and Amortization ($9,000 x .04073) =	$	400
Annual Maintenance =		200
Total Federal Charges	$	10,000

NON-FEDERAL ANNUAL CHARGES

Cash Contribution $154,000		
Interest and Amortization ($154,000 x .04073)	$	6,300
Total Annual Charges	$	16,300

ESTIMATES OF BENEFITS

46. Studies to evaluate tangible commercial fishing and recreational benefits found that there is no commercial navigation in the cove at the present time. Several commercial fishing companies at one time operated out of Bissell Cove, but they have apparently either gone out of business or moved away. An investigation to determine who and where these companies are now was unsuccessful. Nearby commercial

fishing interests have shown no interest in extending or locating at Bissell Cove if improved. The one and only mill located at the cove has reported they have no need of the cove for navigation. As a result, no commercial navigation is expected to develop at the cove. However, a potential for increased recreational boat use does exist for the cove area. Therefore, any benefits to be derived from improvement of the cove would accrue solely to the existing and prospective recreational fleets.

47. U.S. Fish and Wildlife Service, in cooperation with the Rhode Island Division of Fish and Game and the Bureau of Commercial Fisheries, report that the considered navigation improvement is not expected to result in significant benefits to commercial fishermen although some quahog tongers would probably use the anchorage. Benefits to this group would be in terms of improved convenience rather than in a significant increase in fishing activity or harvest. Some minor benefits will occur to sport fishing from boats.

48. Bissell Cove has not shared in the recent increase in recreational boating activity in Rhode Island. In fact, there has been little local interest in developing the cove for navigation for many years, and for all practical purposes boating has come to a standstill. A visit to nearby Wickford Harbor, however, was made in November 1965 to determine whether boating interests in this harbor would extend or relocate their facilities to Bissell Cove, if improved. Marina interests at Wickford Harbor reported that with improvement some of their boats would probably utilize Bissell Cove.

49. Benefits for the recreational fleet have been evaluated as the gain in annual return which the owner of the craft would enjoy if improvements were made. The annual net return to the owners of recreational boats has been taken as the net amount the owners would receive if they chartered their boats to others. The value of this gain is expressed as a percentage of the current market value of the fleet. The gain represents the difference between present use of the harbor and the increased use that will be made possible as a result of improvement. Ideal return varies according to the size and type of boat. For this report, the ideal return would range from 13 percent for outboards, 8 percent for the larger boats, and 14 percent for full-time charter boats.

50. There are no records of specific groundings or accidents involving vessel damages for which monetary benefits could be applied at Bissell Cove.

51. There are no specific records of the number of existing recreational boats using Bissell Cove as their home base. Field inspection

of the project area, information obtained at the public hearing and aerial photos taken in August 1964 confirmed the existence of a small recreational fleet. This existing, locally-based fleet is owned and operated by nearby residents and consists of about 10 boats, excluding rowboats, made up of 4 inboards, 3 cruisers, and 3 sailboats. These vessels cannot use the cove due to existing shoaled conditions and are forced to anchor in the unprotected water of Narragansett Bay, just outside the cove. Benefits of increased use by these 10 boats have been computed on the basis of providing full, unrestricted use of the project. These benefits, being recreational, have been classified as 50 percent general and 50 percent local, in accord with accepted practice. They are shown in Table I.

52. At the present time, boat owners are enjoying a 120-day boat season in this area. It is estimated that with improvement 240 boats would visit the cove annually and stay on the average of one day each. On this basis, a prospective attracted transient fleet equivalent to 2 locally-based boats is expected soon after improvement. Benefits for these boats are shown in Table II.

53. Many small recreational boats make use of open anchorage space at nearby Wickford Harbor. Some owners are putting up with boating conditions not completely to their liking and would take advantage of a navigation facility such as planned for Bissell Cove. On this basis, benefits have been estimated for 3 transfer boats from Wickford Harbor, primarily due to convenience on the part of the boat owner. Benefits for these boats are shown in Table III.

54. It is considered reasonable that if boating interests agree to construct a 40-slip marina, its boat capacity would be reached soon after improvement. On this basis, benefits have been estimated for 35 new boats expected to make Bissell Cove their home port and make full use of the planned marina facility. Also, an additional 10 boats could be expected to moor within the 2-acre Federal maneuvering basin and not use or interfere in the boating activities at the marina. The remaining 5 marina slips and available open anchorage space would be occupied by boat owners from the existing, transient and transfer fleets mentioned above. Benefits for these boats are shown in Table IV.

55. The evaluated benefits for improvement of Bissell Cove are summarized on the following page.

TABLE I - BENEFITS TO RECREATIONAL BOATING
EXISTING FLEET

HARBOR: Bissell Cove, R. I. (120-day Season)

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	% OF IDEAL Pres.	% OF IDEAL Future	GAIN	VALUE $	ON CRUISE AVG. DAYS	ON CRUISE % OF SEASON	ON CRUISE VALUE $
RECREATIONAL FLEET												
Inboards	10-20	4	2,000	8,000	10	30	100	7	560	-	-	-
Cruisers	15-30	3	3,000	9,000	9	30	100	6.3	566	12	10	57
Sailboats	10-20	3	600	1,800	12	30	100	8.4	151	-	-	-
TOTALS		10		$18,800					$1,277			$57

$1,277 - $57 = $1,220

TABLE II - BENEFITS TO RECREATIONAL BOATING
TRANSIENT FLEET (EQUIVALENT)

HARBOR: Bissell Cove, R. I.

(120-day Season)

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	% OF IDEAL Pres.	% OF IDEAL Future	GAIN	VALUE $	ON CRUISE AVG. DAYS	ON CRUISE % OF SEASON	ON CRUISE VALUE $
RECREATIONAL FLEET												
Aux. Sail	15-30	1	5,000	5,000	9	80	100	1.6	80			
Sailboats	21-30	1	6,000	6,000	8	80	100	1.6	96			
TOTALS		2		11,000					176 Say 180			

TABLE III - BENEFITS TO RECREATIONAL BOATING

TRANSFERRED BOATS

HARBOR: Bissell Cove, R.I. (120-day Season)

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	% OF IDEAL Pres.	% OF IDEAL Future	GAIN	VALUE $	ON CRUISE AVG. DAYS	ON CRUISE % OF SEASON	ON CRUISE VALUE $
RECREATIONAL FLEET												
Cruisers	15-30	1	3,000	3,000	9	70	100	2.7	81	12	10	8
Aux. Sail	15-30	2	5,000	10,000	9	70	100	2.7	270	12	10	27
TOTALS		3		$13,000					$351			$35

$351 - $35 = $316 - Say $320

TABLE IV - BENEFITS TO RECREATIONAL BOATING

NEW BOATS (SOON AFTER IMPROVEMENT)

HARBOR: Bissell Cove, R. I. (120-day Season)

TYPE OF CRAFT	LENGTH (feet)	No. of Boats	DEPRECIATED VALUE AVERAGE $	DEPRECIATED VALUE TOTAL $	PERCENT RETURN IDEAL	% OF IDEAL Pres.	% OF IDEAL Future	GAIN	VALUE $	ON CRUISE AVG. DAYS	ON CRUISE % OF SEASON	ON CRUISE VALUE $
RECREATIONAL FLEET												
Outboards	10-20	6	1,200	7,200	13	0	100	13	936	-	-	-
Inboards	10-20	5	3,500	17,500	10	0	100	10	1,750	-	-	-
Cruisers	15-30	4	7,000	28,000	9	0	100	9	2,520	12	10	252
	31-50	4	12,000	48,000	8	0	100	8	3,840	18	15	574
Aux. Sail	15-30	4	7,000	28,000	9	0	100	9	2,520	12	10	252
	31-40	3	10,000	30,000	8	0	100	8	2,400	18	15	360
Sailboats	10-20	4	1,000	4,000	12	0	100	12	480	-	-	-
	21-30	4	8,000	32,000	9	0	100	9	2,880	12	10	288
CHARTER BOATS												
Cruisers	36-50	1	10,000	10,000	14	0	100	14	1,400	-	-	-
TOTALS		35		$204,700					$18,726			$1,726

$18,726 - $1,726 = $17,000

SUMMARY OF BENEFITS

Source	Local	General	Total
Existing Recreational Fleet	$ 610	$ 610	$ 1,220
Transient " "	90	90	180
Transferred " Boats	160	160	320
New Boats (Soon after improvement)	$ 8,500	$ 8,500	$ 17,000
	$ 9,360	$ 9,360	$ 18,720
			say $ 18,700
	50%	50%	100%

COMPARISON OF BENEFITS AND COSTS

56. Comparison of the estimated annual benefits of $18,700 to the estimated annual carrying charges of $16,300 results in a benefit-cost ratio of 1.15.

PROPOSED LOCAL COOPERATION

57. A Federal navigation project to provide for construction of an entrance channel, 2 stone jetties, a maneuvering and anchorage basin, and gravel dike would entail definite items of local cooperation. The benefits to be derived from improvement of Bissell Cove are entirely recreational in nature. State and/or Town interests would be required to contribute 50% of the first cost of construction of the considered Federal project, said cash contribution currently estimated at $154,000.

58. In addition to the cash contribution, local interests would be required to:

a. Provide and maintain necessary access road, mooring facilities, and parking ramp, toilet facilities, and an adequate public marina as needed to accommodate at least 40 recreational boats with berths and local access channels serving the marina commensurate with the Federal project depth and with provision for the sale of motor fuel, lubricants, and potable water, available to all on equal terms. All slips and berthing facilities are to be provided outside the limits of the Federal project.

b. Provide without cost to the United States all lands, easements and rights-of-way required for construction and subsequent maintenance of the project and for aids to navigation upon the request of the Chief of Engineers, including suitable areas determined by the Chief of Engineers to be required in the general public interest for subsequent disposal of spoil, and also necessary retaining dikes, bulkheads and embankments therefor or the costs of such retaining works.

c. Hold and save the United States free from damages that may result from construction and subsequent maintenance of the project.

d. Establish a competent and properly constituted public body empowered to regulate the use, growth and free development of the harbor facilities with the understanding that the public facilities will be open to all on equal terms.

e. Accomplish without cost to the United States such utility or other relocations or alterations as necessary to insure effective and adequate public use of the project for navigation.

f. Establish regulations prohibiting discharge of untreated sewage, garbage and other pollutants in the waters of the river by users thereof, which regulations shall be in accordance with applicable laws or regulations of Federal, State and local authorities responsible for pollution prevention and control.

g. Comply with Title VI of the Civil Rights Act of 1964 (P. L. 88-352) which provides that no person in the United States shall on the grounds of race, color, or national origin be excluded from participation in or benefits of, or otherwise subjected to discrimination under a Federally-financed program or activity.

59. It is considered that to construct the private marina extensive pier and float construction would be required as well as related shore facilities and would involve some dredging. The cost for the 40-boat marina facility and all related service facilities has been conservatively estimated at $125,000.

COORDINATION WITH OTHER AGENCIES

60. All Federal, State and local interests having an interest in the navigation improvements of Bissell Cove were notified of the public

hearing held on 9 December 1964 in North Kingstown, Rhode Island. All present at the hearing were in favor of an improvement. Officials of the State of Rhode Island, the Town of North Kingstown, recreational and fishing interests have since been consulted concerning the effects of the considered improvement on their activities. They concurred with the considered plan of improvement. However, responsible Town officials indicated that its citizens could not afford an expenditure for navigation in Bissell Cove at this time and knew of no industry interested in constructing a marina facility required as an item of local cooperation. Comments of local and State interests are contained in Appendix B of this report.

61. The United States Coast Guard was advised of the improvement under consideration and has reported on the needs and costs for aids to navigation.

62. The Regional Office of the United States Fish and Wildlife Service was also requested to comment on the plan of improvement. Their report (see Appendix A) states that a navigation project is not expected to result in significant benefits to commercial fishermen, increase fishing activity or harvest. The report further states that spoil of dredged material within the Cove would damage the fish and wildlife resources and recommends spoil be deposited on an approved dumping ground in Narragansett Bay.

CONCLUSIONS

63. The present and prospective needs of recreational boating at Bissell Cove would be adequately met by a Federal navigation project in conjunction with a marina facility. This project would provide an entrance channel 6 feet deep, 100 feet wide from the 6-foot depth contour in Narragansett Bay to the vicinity of the required marina, a 2-acre maneuvering and anchorage basin at the head of the proposed channel, two protective stone jetties and a gravel dike as shown on the map accompanying this report. The resulting project benefits, solely recreational, are sufficient to warrant Federal improvement. However, town officials reported that the citizens of North Kingstown are financially unable to contribute, as required, toward the cost of the proposed improvement. Local interests have shown no interest, at this time, in constructing the required marina.

RECOMMENDATIONS

64. In view of the above, the Division Engineer recommends that no improvement of Bissell Cove, North Kingstown, Rhode Island, be made at this time.

REMI O. RENIER
Colonel, Corps of Engineers
Division Engineer

CORPS OF ENGINEERS

U. S. ARMY

NARRAGANSETT BAY

Little Tree Pt

Wild Goose Pt

Duck Cove

Mill Pond

Tidal Flat

The Hummocks

Fox Island

Seal Rock

The Clump

Rome Pt

Bissell Cove

Mill Rk

Hamilton Brook

TO WICKFORD HARBOR 2 MILES

TO PROVIDENCE ROUTE #1

ROAD

SWAMP

MHW

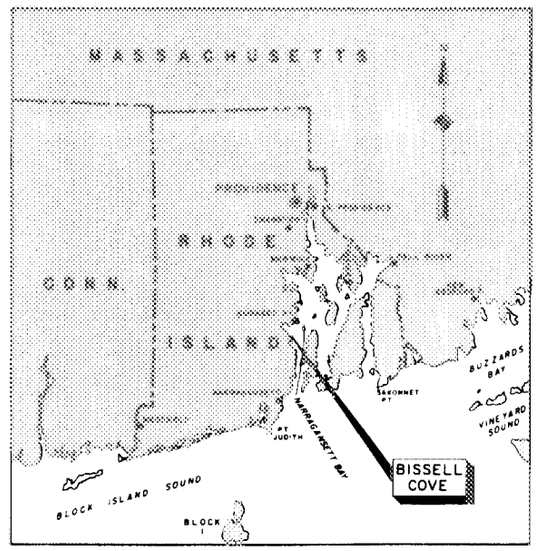
ROCKY REEF UNCOVERED AT M.L.W.

CONSIDERED LOCATION FOR MARINA FACILITY

NOT RECOMMENDED

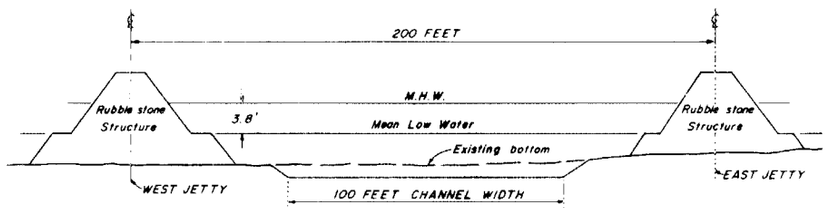
CONSIDERED PLAN OF IMPROVEMENT FOR NAVIGATION

- 40-SLIP MARINA
- 2-ACRE, 6-FOOT DEEP BASIN
- ENTRANCE CHANNEL-100-FT WIDE, 6-FT. DEEP
- TWO STONE JETTIES
- GRAVEL DIKE



LOCATION MAP

SCALE IN MILES



SECTION A-A

OF CONSIDERED CHANNEL AND JETTIES

NOT TO SCALE

NOTE

Jetty height varies from 6 ft to 8 ft above M.L.W.

Top width 5 ft

Slopes 1 on 1.5

5 ft Berm width at M.L.W.

NOTE

Soundings are in feet and are referred to the plane of Mean Low Water

Mean Range of Tide - 3.8 feet

REVISION	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DR. BY L.R.L. | TR. BY L.R.L. | CK. BY

PROJECT ENGINEER

SUBMITTED

CHIEF, COASTAL INVES. SECT.

APPROVAL RECOMMENDED

CHIEF, PLANNING BRANCH

APPROVED

CHIEF, ENGINEERING DIVISION

BISSELL COVE, NORTH KINGSTOWN, RHODE ISLAND

SCALE IN FEET

4800 0 4800 9600

DATE SEPT. 1967

SCALE AS SHOWN

TO ACCOMPANY REPORT

DATED: 5 OCTOBER 1967
REVISED APRIL 1968

DRAWING NUMBER
Nor. B. 245

SHEET 1 of 1

CORPS OF ENGINEERS

U. S. ARMY

NARRAGANSETT BAY

Little Tree Pt

Wild Goose Pt

Duck Cove

Mill Pond

TO PROVIDENCE ROUTE #1

ROAD

SWAMP

Tidal Flat

Mill Rk

Bissell Cove

Hamilton Brook

The Hummocks

Fox Island

Seal Rock

ROCKY REEF UNCOVERED AT M.L.W.

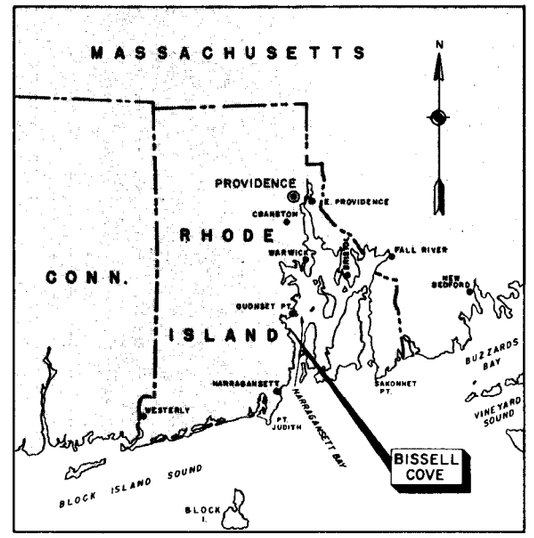
The Clump

Rome Pt

TO WICKFORD HARBOR 2 MILES

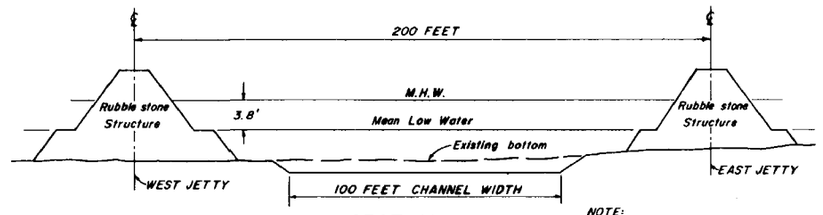
CONSIDERED LOCATION FOR MARINA FACILITY

MHW



LOCATION MAP

SCALE IN MILES



SECTION A-A

OF CONSIDERED CHANNEL AND JETTIES

NOT TO SCALE

NOTE:

Jetty height varies from 6ft. to 8ft. above M.L.W.

Top width 5ft.

Slopes 1 on 1.5

5ft. Berm width at M.L.W.

NOTE:

Soundings are in feet and are referred to the plane of Mean Low Water

Mean Range of Tide-3.8 feet

NOT RECOMMENDED

CONSIDERED PLAN OF IMPROVEMENT FOR NAVIGATION

40-SLIP MARINA

2-ACRE, 6-FOOT DEEP BASIN

ENTRANCE CHANNEL-100-FT WIDE, 6-FT. DEEP

TWO STONE JETTIES

GRAVEL DIKE

REVISION	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DR. BY L.R.L. | TR. BY L.R.L. | CK. BY R.T.D.

SUBMITTED: PROJECT ENGINEER

SUBMITTED: CHIEF, CONSTR. DIVISION

APPROVAL RECOMMENDED: CHIEF, PLANNING BRANCH

APPROVED: CHIEF, ENGINEERING DIVISION

BISSELL COVE, NORTH KINGSTOWN, RHODE ISLAND

SCALE IN FEET

4800 0 4800 9600

DATE SEPT. 1967

TO ACCOMPANY REPORT DATED: 5 OCTOBER 1967 REVISED APRIL 1968

SCALE AS SHOWN

DRAWING NUMBER Nor. B. 245

SHEET 1 of 1

APPENDIX A

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
59 TEMPLE PLACE
BOSTON, MASSACHUSETTS

December 22, 1964

Division Engineer
U.S.Army Engineer Division, New England
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sir:

This letter constitutes our conservation and development report on the fish and wildlife aspects of a possible navigation project at Bissell Cove, Kingston, Rhode Island which you have under study to determine whether a Federal project is warranted at this time. The study was authorized by a Resolution of the Committee of Public Works of the House of Representatives adopted June 23, 1964. This report was prepared under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-666 inc.), in cooperation with the Rhode Island Division of Fish and Game and should be made a part of the record of the public hearing. That agency concurred in the report as indicated by letter dated December 1, 1964. The report was also coordinated with and represents the views of the Bureau of Commercial Fisheries.

It is our understanding that the project may involve dredging an anchorage area in Bissel Cove and a channel leading to deep water.

Bissel Cove is a small shoal cove nearly closed in by a long gravel-sand bar. The uplands adjacent to the cove northward from Hamilton have been developed extensively for housing whereas south of Hamilton the area is lightly developed. Annaquatucket River and Wanmuchecomecut Brook enter Bissel Cove from the west. There is little shoreline development such as docks, etc., and boating use of the cove is light. A considerable pollution problem exists in the cove.

Bissel Cove is important from a fish and wildlife standpoint. Because of the large amount of fresh water entering the cove its biological complex is somewhat typical of an estuarine area. A few areas of undisturbed marsh fringe on the cove in a broken band. Portions of the cove produce hard shell clams and soft shell clams in moderate quantities whereas other areas are unproductive. Those areas whose bottoms consist of hard packed mud are the unproductive ones. Bissel Cove is considered an important source of clam spat important in maintaining commercial clam areas outside the cove.

Various pollutants including silt entering the cove act as deterrents to shellfish production; also, because of pollution, the cove is uncertified for harvesting of shellfish. The area is important as a nursery area for finfish including both sport and bait fish species. Other marine organisms important in the maintenance of a productive food chain find suitable propagation conditions in this estuarine cove. A very important bluefish sport fishing area lies just off the outlet of Bissel Cove and extends to Rome Point. The attractiveness of this area to bluefish is attributed to the quantity of food organisms originating in Bissel Cove. Some waterfowl use is made of the area. No commercial fishing boats are based within the cove.

Shoaling of Bissel Cove through silting and the accumulation of pollutant sludge materials on the bottom is deterring productivity in these waters. It is felt that improving circulation within the cove could improve its overall productivity. Dredging an anchorage inside the outlet and extending the outlet to deep water will improve the circulation in the cove sufficiently to cause an improvement in the estuarine environment. Should an overburden of hard packed mud be removed to expose underlying sand and gravel, an improved bottom habitat for shellfish would result. Some minor benefits will accrue to sport fishing from boats. It is not expected that the project will result in significant benefits to the commercial fisherman although some quahog tongers would probably use the anchorage. Benefits to this group would be in terms of improved convenience rather than in a significant increase in fishing activity or harvest.

Spoiling within the cove would damage the fish and wildlife resources. The marshland fringing the cove is an important element in the estuarine complex of the cove and therefore the marshes should not be used for spoil disposal.

In view of the above it is recommended--

1. That spoil be deposited on an approved dumping ground in Narragansett Bay.

We do not propose to report further on this project. However, should alternate sites for spoiling be considered please notify us so that we can determine the effect of such spoiling on the fish and wildlife resources.

Sincerely yours,

Thomas A Schrader

Thomas A. Schrader
Acting Regional Director

APPENDIX B

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF NATURAL RESOURCES
VETERANS' MEMORIAL BUILDING, PROVIDENCE, R. I. 02903

Charles E. Boyd
DIRECTOR

DIVISIONS OF
Parks and Recreation
Conservation
Agriculture
Harbors and Rivers
Planning and Development
Enforcement

DIVISION OF HARBORS & RIVERS
Prov. R. I. 02908
106 Veterans Memorial Bldg

August 1, 1967

Reni O. Renier
Colonel, Corps of Engineers
Acting Division Engineer
424 Trapelo Road
Waltham, Massachusetts

Dear Colonel Renier: Bissell Cove
North Kingstown, Rhode Island

The proposed plan of navigation improvement prepared by your office for Bissell Cove, North Kingstown, Rhode Island, was described in detail by your representative at a meeting with town officials in the North Kingstown Town Hall, on January 10, 1967, which meeting I also attended as a representative of the State of Rhode Island. In the main, the plan appeared to be generally acceptable to all present. Some suggestions of relatively minor consequence were made. The major question seemed to relate to the ability of the town or private interests to finance the construction of the required 40-boat marina facility, estimated to cost $120,000.

Several weeks ago I inquired of Mr. Harry G. Hug, the Town Manager, as to the present status of the project as far as the town was concerned and was informed that while the town still desires the project and is in favor of the Bissell Cove Improvement as planned, it is not now in a position to finance its share of the cost. He assured me that he would communicate with you in writing and submit the official position of the town, which he indicated would request deferment of the project for the time being.

The State of Rhode Island, therefore, concurs in the decision of the Town of North Kingstown to postpone further action on the

Bissell Cove Navigation Project until such time as the town decides that it can assume its obligations with respect to the federal requirements of local cooperation.

Sincerely yours,

Henry Isé, Chief
Division of Harbors & Rivers

CONCURRENCE:

Charles E. Boyd, Director
Department of Natural Resources

HI:mp

APPENDIX B

TOWN OF
NORTH KINGSTOWN, RHODE ISLAND

HARRY G. HUG
TOWN MANAGER

80 BOSTON NECK ROAD
NORTH KINGSTOWN, R. I.

July 24, 1967

Colonel Remi O. Renier
New England Division
Corps of Engineers
Department of the Army
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Renier:

Reference: NEDED-R

The Bissell Cove study has been reviewed by local officials.

Recently a bond issue for badly needed school additions in North Kingstown was defeated at a special referendum. It is thought this quite clearly indicates the current mood of the taxpayer which results from an ever increasing tax rate to meet the requirements of a growing community.

While it is felt by local officials that further development of our shoreline potential must take place, it is realized that we are currently not in a position to meet the financial requirements of this proposed project.

Efforts are still being made to interest private development in the marina, pier and shore facilities portion of this project, and if such an individual should become known, it is reasonable to assume that the taxpayer would at that time be given opportunity to be heard on this matter in order that officials could grant assurance that local requirements could and would be met.

Sincerely yours,

Harry G. Hug
Town Manager

HGH:mg
cc-Mr. Henry Ise, Chief
Division of Harbors & Rivers
R. I. Dept. of Natural Resources

TOWN OF
NORTH KINGSTOWN, RHODE ISLAND

HARRY G. HUG
TOWN MANAGER

80 BOSTON NECK ROAD
NORTH KINGSTOWN, R. I.

January 31, 1968

Colonel A. D. Wilder
Board of Engineers for Rivers and Harbors
Department of the Army
Corps of Engineers
Washington, D. C. 20315

Dear Colonel Wilder:

Re: ENGBR

Enclosed please find the minutes of the meeting of the Public Hearing which was held on the Bissell Cove Project on December 7, 1967; a copy of the report by the Advisory Committee on Parks and Recreation and the vote of the Town Council of North Kingstown on January 8, 1968.

As will be noted from this material, no action is being taken by the Town of North Kingstown on the proposed improvement of Bissell Cove.

Very truly yours,

Harry G. Hug
Town Manager

HGH:mg
Encls.

#5

TOWN OF
NORTH KINGSTOWN, RHODE ISLAND

80 BOSTON NECK ROAD
NORTH KINGSTOWN, R. I. 02852

January 8, 1968

At the first regular monthly meeting of the Town Council of the Town of North Kingstown held Monday, January 8, 1968 IT WAS VOTED that the report submitted by the Parks and Recreation Advisory Committee on Bissell's Cove, be received and filed.

Harold L. Corey

Harold L. Corey
Town Clerk

TOWN OF
NORTH KINGSTOWN, RHODE ISLAND

80 BOSTON NECK ROAD
NORTH KINGSTOWN, R. I. 02852

December 22, 1967

To the Honorable Town Council
North Kingstown, Rhode Island

REPORT ON BISSELL COVE PROJECT REFERRAL

Following your referral to this committee of the Bissell Cove project, as detailed in the October 18, 1967 report of the Army Corps of Engineers, this committee held a public hearing on the matter at the Town Hall on December 7, 1967. Attached hereto are notes made of the views expressed by those attending said hearing.

Further consideration was given the matter at a meeting of the committee held on December 18, 1967. Two members of the Bissell Cove Association were present at this meeting, as well as a representative of the Conservation Commission.

After discussing the matter in detail, it was agreed that unless some individual or group comes up with a guarantee, by January 13, 1968, of $120,000 for a marina, as required by the Army Corps of Engineers, this committee recommends that the project be abandoned.

ADVISORY COMMITTEE ON
PARKS AND RECREATION

By Charles T. Feurer
Charles T. Feurer, Chairman

TOWN CLERK'S OFFICE
NORTH KINGSTOWN, R. I.
RECEIVED ON FILE 12-28 1967
REFERRED TO 1-8 1968
TOWN COUNCIL MEETING

BISSELL COVE, NORTH KINGSTOWN, RHODE ISLAND

SURVEY (Review of Reports)

Information Required by Senate Resolution 148, 85th Congress, Adopted 28 January 1958

1. Navigation Problems. Bissell Cove is a very shallow, sheltered cove, located midway between Wickford Harbor and Jamestown Bridge on the west shore of Narragansett Bay. Entrance to the cove is restricted to a narrow, twisting, short and extremely shallow opening between two sandspits at the extreme southern end of the inlet. The cove has a water area of about 75 acres at high tide, of which about 80 percent is exposed at low tide. The deposit of material at the entrance and in the cove is due to wave and littoral drift action in northerly and easterly storms.

2. The chief navigation difficulties are due to insufficient depth and width in the entrance channel and the lack of sufficient depth in the cove to accommodate the existing recreational fleet; also, lack of waterfront facilities within the cove to accommodate vessel traffic.

3. Improvement Considered. The study considered all of the needs and desires, as requested by local interests, for navigation improvements at Bissell Cove. A plan of improvement has been developed to meet the needs of local interests for navigation at the cove. The plan represents the most economical and practical development for permitting increased use of the cove for navigation. The plan considered consists of:

a. An entrance channel, 6 feet deep by 100 feet wide from the proposed basin extending seaward to the 6-foot depth contour in Narragansett Bay.

b. Two stone jetties and one gravel dike to protect the channel and anchorage facilities within the cove.

c. A 2-acre, 6-foot deep maneuvering and anchorage basin at the head of the channel.

d. An adequate public marina facility within the cove capable of accommodating at least 40 boats.

4. The estimated total Corps of Engineers cost for the recommended plan of improvement is $308,000 (1967). Local interests would be required to contribute in cash 50 percent or $154,000. In addition, they would be required to provide and maintain a 40-slip marina and attendant facilities estimated to cost $125,000. The resulting project benefits, solely recreational, are sufficient to warrant Federal improvement.

5. Discussion. The navigation study revealed the inadequacy of the cove for existing and prospective recreational boating. The considered Federal improvement, including the required 40-boat marina facility, would provide a logical and economically feasible means of meeting current and prospective needs of navigation in Bissell Cove. The required local cooperation is consistent with other similar projects. However, local interests have reported that they could not meet the financial requirements of local cooperation. Therefore, the Division Engineer recommends no Federal navigation improvement at Bissell Cove at this time.